

ABSTRACT OF THE DISCLOSURE

The invention relates to a method for the qualitative detection of post-translational modification activities in a small liquid sample from organism cells or test chemicals. Phosphorylation/dephosphorylation of proteins by kinases and phosphatases is an example of a post-translational modification. The method is characterised in that protein fragments or polypeptides are synthesised as sensors. The above comprise moieties (1) and (2), containing charged amino acid groups and a recognition site with one or more modification group(s) (X). The sensor has a specific electrostatic potential distribution and a dipole moment. A modification of the sensors occurs on addition of enzymes, associated with a shift in the molecular electrostatic potential distribution and a change in the dipole moment. The potential shift is a determinator for post-translational modification activity. Several device systems are disclosed for the practical carrying out of the method. The method provides a rapid, highly sensitive and effective method for the detection of various types of post-translational activity, in particular, suitable for biological multi-detection systems (biochips and high throughput screening) and finds application in particular to the development of pharmaceuticals, medical diagnostics, basic research and environmental protection.